

In re Application of: Kim et al.
Application No. 10/824,583
Response to Final Office Action of September 7, 2005

Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 (previously presented): An optical system, having an object side and an image side, comprising, in order from an object side:

an iris diaphragm;
a first lens having a positive refractive power and at least one aspheric surface; and
a second lens which is a meniscus lens having a convex image side, a negative refractive power and at least one aspheric surface,
the optical system satisfying the following conditional expression:

$$1.25 < \frac{L_T}{f} < 1.58$$

wherein L_T denotes the total length of the optical system from the object side to an image side; and f denotes the total focal length of the optical system.

Claim 2 (original): The optical system as claimed in claim 1, wherein the optical system further satisfies the following conditional expression:

$$-1.5 < \frac{W_p - W}{W_p} < -0.1$$

wherein W_p is defined by $\tan^{-1}\left(\frac{y}{f}\right)$; W denotes the half angle of view for a maximum effective image circle; and y is the height of a maximum effective image.

Claim 3 (original): The optical system as claimed in claim 1, wherein the optical system further satisfies the following conditional expression:

$$25 < Vd_1 - Vd_2 < 30$$

where Vd_1 denotes the Abbe's value of the d-line ray of the first lens; and Vd_2 denotes the Abbe's value for the d-line ray of the second lens.

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Claim 4 (original): The optical system as claimed in claim 1, wherein the first and second lenses respectively have an aspheric surface on both sides thereof.

Claim 5 (canceled)

Claim 6 (original) The optical system as claimed in claim 1, wherein the first lens is a lens having a convex image side.

Claim 7 (original): An optical system, having an object side and an image side, comprising, in order from an object side:

an iris diaphragm;
a first lens having a positive refractive power and at least one aspheric surface; and
a second lens having a negative refractive power and at least one aspheric surface,
the optical system satisfying the following conditional expression:

$$-1.5 < \frac{W_p - W}{W_p} < -0.1$$

wherein W_p is defined by $\tan^{-1}\left(\frac{y}{f}\right)$; W denotes the half angle of view for a maximum effective image circle; and y is the height of a maximum effective image.

Claim 8 (original): The optical system as claimed in claim 7, wherein the optical system further satisfies the following conditional expression:

$$25 < Vd_1 - Vd_2 < 30$$

where Vd_1 denotes the Abbe's value of the d-line ray of the first lens; and Vd_2 denotes the Abbe's value for the d-line ray of the second lens.

Claim 9 (original): The optical system as claimed in claim 7, wherein the first and second lenses respectively have an aspheric surface on both sides thereof.

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Claim 10 (original): The optical system as claimed in claim 7, wherein the second lens is a meniscus lens having a convex image side.

Claim 11 (original): The optical system as claimed in claim 7, wherein the first lens is a lens having a convex image side.

Claim 12 (currently amended): An optical system, having an object side and an image side, comprising, in order from an object side:

an iris diaphragm;
a first lens having a positive refractive power and at least one aspheric surface; and
a second lens which is a meniscus lens having a convex image side, a negative refractive power and at least one aspheric surface,

the optical system satisfying the following conditional expression expressions:

$$0.75 < \frac{f_B}{f} < 0.95 \quad \text{and} \quad \frac{|R_1|}{f} > 2.1$$

wherein f denotes the total focal length of the optical system; and f_B denotes the distance on the optical axis between the image side surface of the second lens and the image plane; and R_1 denotes the curvature of the object side of the first lens.

Claim 13 (canceled)

Claim 14 (original): The optical system as claimed in claim 12, wherein the optical system further satisfies the following conditional expression:

$$\frac{L_T}{f_B} < 2.4$$

wherein L_T denotes the total length of the optical system from the object side to an image side.

Claim 15 (original): The optical system as claimed in claim 12, wherein the optical system further satisfies the following conditional expression:

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$$0.35 < \frac{t_2}{f} < 0.52$$

wherein t_2 denotes the thickness of the first lens.

Claim 16 (original): The optical system as claimed in claim 12, wherein the optical system further satisfies the following conditional expression:

$$0.14 < \frac{t_4}{f} < 0.23$$

wherein t_4 denotes the thickness of the second lens.

Claim 17 (original): The optical system as claimed in claim 12, wherein the optical system further satisfies the following conditional expression:

$$-1.5 < \frac{W_p - W}{W_p} < -0.02$$

wherein W_p is defined by $\tan^{-1}\left(\frac{y}{f}\right)$; W denotes the half angle of view for a maximum effective image circle; and y is the height of a maximum effective image.

Claim 18 (original): The optical system as claimed in claim 12, wherein the first and second lenses respectively have an aspheric surface on both sides thereof.

Claim 19 (canceled)

Claim 20 (original): The optical system as claimed in claim 12, wherein the first lens is a lens having a convex image side.

Claim 21 (original): An optical system, having an object side and an image side, comprising, in order from an object side:

an iris diaphragm;

a first lens having a positive refractive power and at least one aspheric surface; and

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a second lens having a negative refractive power and at least one aspheric surface, the optical system satisfying the following conditional expression:

$$-1.5 < \frac{W_p - W}{W_p} < -0.02$$

wherein W_p is defined by $\tan^{-1}\left(\frac{y}{f}\right)$; W denotes the half angle of view for a maximum effective image circle; and y is the height of a maximum effective image.

Claim 22 (original): The optical system as claimed in claim 21, wherein the optical system further satisfies the following conditional expression:

$$\frac{|R_1|}{f} > 2.1$$

wherein R_1 denotes the curvature of the object side of the first lens.

Claim 23 (original): The optical system as claimed in claim 21, wherein the optical system further satisfies the following conditional expression:

$$\frac{L_T}{f_B} < 2.4$$

wherein L_T denotes the total length of the optical system from the object side to an image side.

Claim 24 (original): The optical system as claimed in claim 21, wherein the optical system further satisfies the following conditional expressions:

$$0.35 < \frac{t_2}{f} < 0.52$$

$$0.14 < \frac{t_4}{f} < 0.23$$

wherein t_2 denotes the thickness of the first lens, and t_4 denotes the thickness of the second lens.

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Claim 25 (original): The optical system as claimed in claim 21, wherein the first and second lenses respectively have an aspheric surface on both sides thereof.

Claim 26 (original): The optical system as claimed in claim 21, wherein the second lens is a meniscus lens having a convex image side.

Claim 27 (original): The optical system as claimed in claim 21, wherein the first lens is a lens having a convex image side.